

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) An isolated *Piscirickettsia salmonis* 45 Kda (^{Px}p45) protein or recombinant polypeptide comprising the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4 comprising at least one conservative amino acid substitution.
2. (cancelled).
3. (cancelled).
4. (previously presented) The recombinant polypeptide of claim 1 that is a chimeric protein.
5. (cancelled).
6. (previously presented) An isolated or recombinant nucleic acid encoding the isolated ^{Ps}p45 protein or recombinant polypeptide of claim 1.
7. (previously presented) The nucleic acid of claim 6 comprising a nucleotide sequence selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.
8. (cancelled).
9. (previously presented) An expression vector, comprising the nucleic acid of claim 7, and a transcriptional control sequence, wherein the nucleic acid is operatively linked to the transcriptional control sequence.
10. (previously presented) A host cell that comprises the expression vector of claim 9.

11. (previously presented) A method for producing a ^{Ps}p45 recombinant polypeptide comprising culturing the host cell of claim 10 in a culture medium, wherein the host cell expresses the nucleic acid encoding the recombinant ^{Ps}p45 polypeptide; and whereby the recombinant ^{Ps}p45 polypeptide is produced.
12. (previously presented) The method of claim 11 wherein the host cell is an *E. coli* cell.
13. (previously presented) A method of obtaining a purified recombinant ^{Ps}p45 polypeptide comprising purifying the recombinant polypeptide produced by the method of claim 12 from the culture medium.
14. (previously presented) The purified recombinant ^{Ps}p45 polypeptide obtained by the method of claim 13.
15. (previously presented) A recombinant *Yersinia ruckeri* cell comprising the expression vector of claim 9.
16. (previously presented) The recombinant *Yersinia ruckeri* cell of claim 15 that has the BCCM accession No. of LMG P-22044.
17. (cancelled).
18. (previously presented) A vaccine that comprises the isolated ^{Ps}p45 protein or recombinant ^{Ps}p45 polypeptide of claim 1.
19. (previously presented) A vaccine that comprises the nucleic acid of claim 6.
20. (previously presented) A vaccine comprising the recombinant *Yersinia ruckeri* cell of claim 15.

21. (previously presented) The vaccine of claim 20, wherein said recombinant *Yersinia ruckeri* cell is a bacterin.
22. (previously presented) A vaccine comprising the recombinant *Yersinia ruckeri* cell of claim 16.
23. (previously presented) The vaccine of claim 22, wherein said recombinant *Yersinia ruckeri* cell is a bacterin.
24. (cancelled).
25. (previously presented) The vaccine of any of claims 18-23, 45, 49 or 50 further comprising an antigen obtained from an Infectious Pancreatic Necrosis (IPN) virus.
26. (previously presented) The vaccine of claim 25 wherein the antigen obtained from the IPN virus is selected from the group consisting of VP2 var protein and VP3 protein.
27. (previously presented) The vaccine of claim 25 wherein the IPN antigen is comprises both VP2 var protein and VP3 protein from Infectious Pancreatic Necrosis (IPN) virus.
28. (cancelled).
29. (cancelled)
30. (previously presented) The vaccine of claim 25 that further comprises an antigen obtained from *Aeromonas salmonicida*.
31. (previously presented) A method of protecting a fish from salmonid rickettsial septicemia comprising administering to the fish the vaccine of any of claims 18-23, 45, 49 or 50.

32. (previously presented) The method of claim 31 wherein the fish is a teleost.
33. (previously presented) The method of claim 32 wherein the teleost is a salmonid.
34. (previously presented) A method of protecting a fish from salmonid rickettsial septicemia and Infectious Pancreatic Necrosis comprising administering to the fish the vaccine of claim 25.
35. (previously presented) The method of claim 34 wherein the fish is a salmonid.
36. (previously presented) The method of claim 33 wherein the salmonid is selected from the group consisting of a *Salmo salar* (Atlantic salmon), an *Oncorhynchus kisutch* (coho salmon) and an *Oncorhynchus mykiss* (rainbow trout).
37. (cancelled).
38. (cancelled).
39. (cancelled).
40. (cancelled).
41. (cancelled).
42. (cancelled).
43. (cancelled)
44. (previously presented) The method of claim 35 wherein the salmonid is selected from the group consisting of a *Salmo salar* (Atlantic salmon), an *Oncorhynchus kisutch* (coho salmon) and an *Oncorhynchus mykiss* (rainbow trout).
45. (previously presented) A vaccine comprising the recombinant *Yersinia rucker* of claim 16.
46. (previously presented) The isolated *Piscirickettsia salmonis* 45 Kda (^{Pi}p45) protein

or recombinant polypeptide of claim 1 comprising the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4.

47. (previously presented) An isolated or recombinant nucleic acid encoding the isolated *P_s*p45 protein or recombinant polypeptide of claim 46.

48. (previously presented) An expression vector, comprising the nucleic acid of claim 47, and a transcriptional control sequence, wherein the nucleic acid is operatively linked to the transcriptional control sequence.

49. (previously presented) A vaccine that comprises the expression vector of claim 9.

50. (previously presented) A vaccine that comprises the expression vector of claim 48.

51. (previously presented) The isolated *P_s*p45 protein or recombinant polypeptide of claim 1 wherein the *P_s*p45 protein has at least 95% identity with the amino acid sequence of SEQ ID NO: 2 and/or SEQ ID NO: 4.

52. (previously presented) An isolated or recombinant nucleic acid encoding the isolated *P_s*p45 protein or recombinant polypeptide of claim 51.

53. (previously presented) An expression vector, comprising the nucleic acid of claim 52, and a transcriptional control sequence, wherein the nucleic acid is operatively linked to the transcriptional control sequence.

54. (previously presented) A vaccine that comprises the expression vector of claim 53.

55. (previously presented) An isolated *Piscirickettsia salmonis* 45 Kda (*P_s*p45) protein or recombinant polypeptide comprising the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4, wherein the *P_s*p45 protein has at least 95% identity with the amino acid sequence of SEQ

ID NO: 2 and/or SEQ ID NO: 4.

56. (previously presented) An isolated or recombinant nucleic acid encoding the isolated P_{sp}45 protein or recombinant polypeptide of claim 55.

57. (previously presented) An expression vector, comprising the nucleic acid of claim 56, and a transcriptional control sequence, wherein the nucleic acid is operatively linked to the transcriptional control sequence.

58. (previously presented) A vaccine that comprises the expression vector of claim 57.

59. (new) The vaccine of claim 27 wherein the VP2 var protein is obtained from a transformed *Pichia pastoris* cell, BCCM Accession No. IHEM 20069 and the VP3 protein is obtained from a transformed *Pichia pastoris* cell, BCCM Accession No. IHEM 20071.

60. (new) The vaccine of claim 27 wherein the VP2 var protein is obtained from a transformed *Pichia pastoris* cell, BCCM Accession No. IHEM 20070 and the VP3 protein is obtained from a transformed *Pichia pastoris* cell, BCCM Accession No. IHEM 20072.